

Product Brief

Intel® E7520 Chipset for Dual-Core

Intel® Xeon® Processors LV and ULV

Embedded Computing



Intel® E7520 Chipset

for Dual-Core Intel® Xeon® Processors LV and ULV for Embedded Computing

Product Overview

The Intel® E7520 chipset – utilizing dual-processor, high-bandwidth chipset technology – enables reduced power consumption with improved platform reliability and system manageability compared to previous-generation Intel® chipsets. The 667 MHz front-side bus supports Dual-Core Intel® Xeon® processors LV and ULV, providing bandwidth up to 5.3 GB/s. The Dual-Core Intel Xeon processor LV has a thermal design power (TDP) of 31 watts, while the ULV version has a TDP of 15 watts.

These processors combine the benefits of dual-core/dual-processor capabilities (four cores for a dual-processor platform) and intelligent power management for improved performance/watt. This makes them ideal for a wide range of low-power communications and embedded applications, such as storage area networks (SANs), network attached storage (NAS), routers, virtual private networks (VPNs), firewalls, intrusion detection systems, and telecommunications (wireless and wireline) servers, particularly in AdvancedTCA* form-factor designs.

The Intel® E7520 Memory Controller Hub (MCH) includes PCI Express*¹ serial I/O technology and DDR2 memory technology to help increase I/O bandwidth and reduce system latency for

data-intensive applications. It is the central hub for all data passing among the core system elements, including processors, memory, PCI Express I/O, and legacy I/O subsystems.

Memory

Intel E7520 chipset-based platforms can be designed to support single- or dual-channel DDR2-400 memory (up to 16 GB). DDR2-400 memory technology is ideal for storage and memory-intensive applications, providing up to 20% increase in memory bandwidth and up to 40% decrease in power consumption over DDR 333. The memory subsystem interface to the MCH is dual channel, supporting three or four registered DIMMs per channel – depending on memory technology – for a total system bandwidth of up to 6.4 GB/s.

PCI Express

For demanding I/O and networking applications, PCI Express interfaces attach a variety of Intel and third-party I/O solution components and adapters directly to the Intel E7520 MCH at throughput speeds of up to 4 GB/s on each x8 interface, allowing I/O to keep pace with the rest of the platform. The MCH has three x8 PCI Express interfaces which can each be bifurcated into two x4 interfaces for additional configuration flexibility.

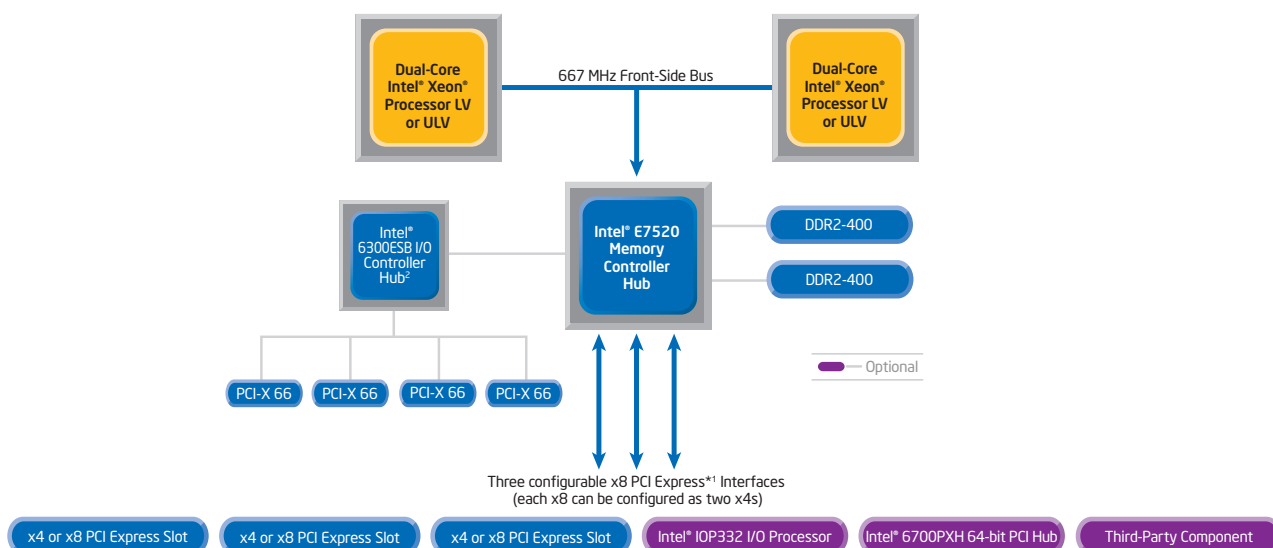


Figure 1: Intel® E7520 Chipset with two Dual-Core Intel® Xeon® processors LV or ULV.

¹ PCI Express reduced-power state L0s not supported.

² Intel® 6300ESB ICH supports up to 4 PCI-X down devices.

Intel® 6300ESB I/O Controller Hub

Available as the I/O controller hub for legacy I/O support, the Intel® 6300ESB I/O Controller Hub (ICH) attaches directly to the MCH through the Intel® Hub Interface 1.5 connection. For the most demanding storage data transfers, it integrates dual independent SATA controllers, each capable of up to 150 MB/s transfer rate. Four Hi-Speed USB 2.0 ports allow easy I/O connection while offering improved bandwidth compared to USB 1.1 devices. The Intel 6300ESB ICH includes a PCI-X 64/66 bus supporting up to four PCI-X 64/66 MHz masters.

Intel® 6700PXH 64-bit PCI Hub (Optional)

The Intel® 6700PXH 64-bit PCI Hub connects to the MCH through a point-to-point x8 or x4 PCI Express interface. Each hub contains two bus segments that can be independently configured to operate in PCI (33 or 66 MHz) or 64-bit PCI-X mode (66, 100, or 133 MHz), for either 32-bit or 64-bit PCI/PCI-X devices. In addition, each hub integrates two PCI standard hot plug controllers – one per PCI/PCI-X interface – and can be independently configured up to two PCI-X 64/133 MHz segments.

Features	Benefits
Supports two Dual-Core Intel® Xeon® processors LV or ULV with 667 MHz front-side bus and 2 MB L2 cache	• The combination of dual-processor support with dual-core processors provides four high-performance cores per platform, meeting the needs of high-performance, low-power applications with small form-factor constraints
PCI Express* ¹	• Direct connection between the MCH and PCI Express component/adapters; bandwidth up to 4 GB/s on each x8 PCI Express interface; higher bandwidth and less I/O bottlenecks than PCI-X
DDR2-400 memory interface	• Maximum memory bandwidth of 6.4 GB/s • Decreased power consumption – especially important on dense rack, hot-plug controller and blade configurations
Intel® 6700PXH 64-bit PCI Hub (Optional)	• Supports two independent 64-bit, 133 MHz PCI-X segments and two hot-plug controllers (one per segment) • Enhancements to PCI/PCI-X performance and platform flexibility
Intel® Hub Interface 1.5 connection	• Point-to-point connection between the MCH and the Intel® 6300ESB I/O Controller Hub provides 266 MB/s of bandwidth
Advanced Platform RAS	• Features such as memory ECC, Intel® x4 Single Device Data Correction ² (x4 SDDC), DIMM sparring, DIMM scrubbing and memory mirroring can improve system reliability • 32-bit cyclic redundancy check on PCI Express • Hot swap PCI Express enhances serviceability • SMBus port hooks into Intel® E7520 MCH for remote management operation and support for a variety of third-party base management controller and BIOS solutions

Product	Product Code	Package
Intel® E7520 Memory Controller Hub (MCH)	NQE7520MC	1077 Flip Chip-Ball Grid Array (FC-BGA)
Intel® 6300ESB I/O Controller Hub	FW66300ESB	689 Plastic Ball Grid Array (PBGA)
Intel® 6700PXH 64-bit PCI Hub (optional)	RG82870P2	567 Flip Chip-Ball Grid Array (FC-BGA)

¹ PCI Express reduced-power state L0s not supported.

² In an x4 DDR memory device, the Intel x4 Single Device Data Correction (x4 SDDC), provides error detection and correction for one to four data bits within a single device, and provides error detection for up to eight data bits within two devices.

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